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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,041	08/21/2003	Mark Allen Grubbs	AUS920030044US1	7328

42640 7590 01/29/2007  
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EXAMINER
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MASKULINSKI, MICHAEL C

ART UNIT	PAPER NUMBER
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2113

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/645,041

Applicant(s)

GRUBBS ET AL.

Examiner

Michael C. Maskulinski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**Non-Final Office Action**

***Drawings***

1. The drawings were received on November 24, 2003. These drawings are accepted.

***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 8-11 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 8 is not limited to tangible embodiments. In view of Applicant's disclosure, specification page 11, lines 1-3, the medium is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g., recordable type media) and intangible embodiments (e.g., transmission type media). As such, the claim is not limited to statutory subject matter and is therefore non-statutory.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Bergsten, U.S. Patent 6,363,462 B1.

Referring to claim 1:

- a. In column 13, lines 27-32, Bergsten discloses that the storage controller receives a write request from a host. Then the standard checks are performed (interrogating a logical partition of a sparse logical volume to determine if said logical partition contains valid data).
- b. In column 6, lines 26-31, Bergsten discloses that a local host computer accesses data by transmitting a (virtual) host address to its local storage controller. The host address is then mapped to a real address representing a location on one or more physical MSDs (in response to a determination that said logical partition contains valid data, allocating said logical partition to a corresponding physical partition within a physical volume).
- c. In column 13, lines 30-32, Bergsten discloses that if any of the standard checks fail, then the routine exits, presenting an error status message to the host (and in response to a determination that said logical partition does not contain any valid data, returning to said interrogating for a next logical partition within said sparse logical volume).

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Referring to claim 2, in column 9, lines 41-43, Bergsten discloses that the storage controller maintains and uses a tree structure to map the host interface ID and block number to a logical device (wherein said method further includes recording the relationship between partitions within said sparse logical volume and partitions within said physical volume in a mapping list).

Referring to claim 3, in column 9, lines 41-43, Bergsten discloses that the storage controller maintains and uses a tree structure to map the host interface ID and block number to a logical device (recording the relationship between partitions within said sparse logical volume and partitions within said physical volume in an extent list).

6. Claims 4-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Olson et al., U.S. Patent 7,127,633 B1.

Referring to claims 4, 8, and 12:

a. In column 21, lines 8-10, Olson et al. disclose that the failure manager on a slave controller can detect a physical disk failure that can be corrected by employing a hot spare (replacing said damaged physical volume with a replacement physical volume).

b. In column 7, lines 14-21, Olson et al. disclose maintaining which areas of which physical drives correspond to a particular virtual RAID device. Further, in column 21, lines 17-24, Olson et al. disclose that the resource manager sends to all slave controllers in the VCG a message indicating the new physical disk ID of the hot spare. Each slave controller, and the master controller, is affected by the failure, to the hot spare as is typically done in the event of provisioning a hot

spare in a single-controller SAN (interrogating a partition within said sparse logical volume; in response to said partition within said sparse logical volume being allocated, copying said partition to said replacement physical volume and returning to said interrogating until all partitions within said sparse logical volume have been interrogated; and in response to said partition within said sparse logical volume not being allocated, returning to said interrogating until all partitions within said sparse logical volume have been interrogated).

Referring to claims 5, 9, and 13, in column 7, lines 14-15, Olson et al. disclose determining which areas of which physical drives correspond to a particular virtual RAID device and in column 8, lines 23-24, Olson et al. disclose mirroring the data (wherein said method further includes allocating only in-use partitions of said sparse logical volume in said mirrored physical volumes).

Referring to claims 6, 10, and 14, in column 3, lines 21-33, Olson et al. teach wherein said method further includes recording the relationship between partitions within said sparse logical volume and partitions within said mirrored physical volumes in a mapping list.

Referring to claims 7, 11, and 15, in column 3, lines 21-33, Olson et al. teach wherein said method further includes recording the relationship between partitions within said sparse logical volume and partitions within said mirrored physical volumes in an extent list.

### ***Conclusion***

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7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited prior art is related to virtual addressing and virtual arrays.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Maskulinski whose telephone number is 571-272-3649. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on 571-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael C Maskulinski  
Examiner  
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